CHP Policy Activity Status of the Midwest States

ENERGY SAVINGS GOAL - TECHNICAL WORKGROUP
COMBINED HEAT AND POWER #2

Minnesota Department of Commerce

October 28, 2013

St. Paul, MN

Cliff Haefke

U.S. Department of Energy
CHP Technical Assistance Partnerships
MIDWEST

Outline

- DOE CHP TAPs
- State CHP Policy Activities
  - Group 1: Illinois, Ohio, Iowa, Minnesota
  - Group 2: Indiana, Michigan, Wisconsin
- Open Discussion

US DOE CHP Technical Assistance Partnerships (TAPs)

- **U.S. DOE CHP Technical Assistance Partnerships (TAPs)** originally established in 2001 by U.S. DOE and ORNL to support DOE CHP Challenge (formally known as RACs and CEACs)
- Today the **7 TAPs** promote the use of **CHP, District Energy with CHP, and Waste Heat to Power** Technologies
- Strategy: provide a technology outreach program to end users, policy, utility, and industry stakeholders focused on:
  - **Market Opportunity Analysis**
  - **Education and Outreach**
  - **Technical Assistance**
- Midwest Website: www.midwestCHPTAP.org

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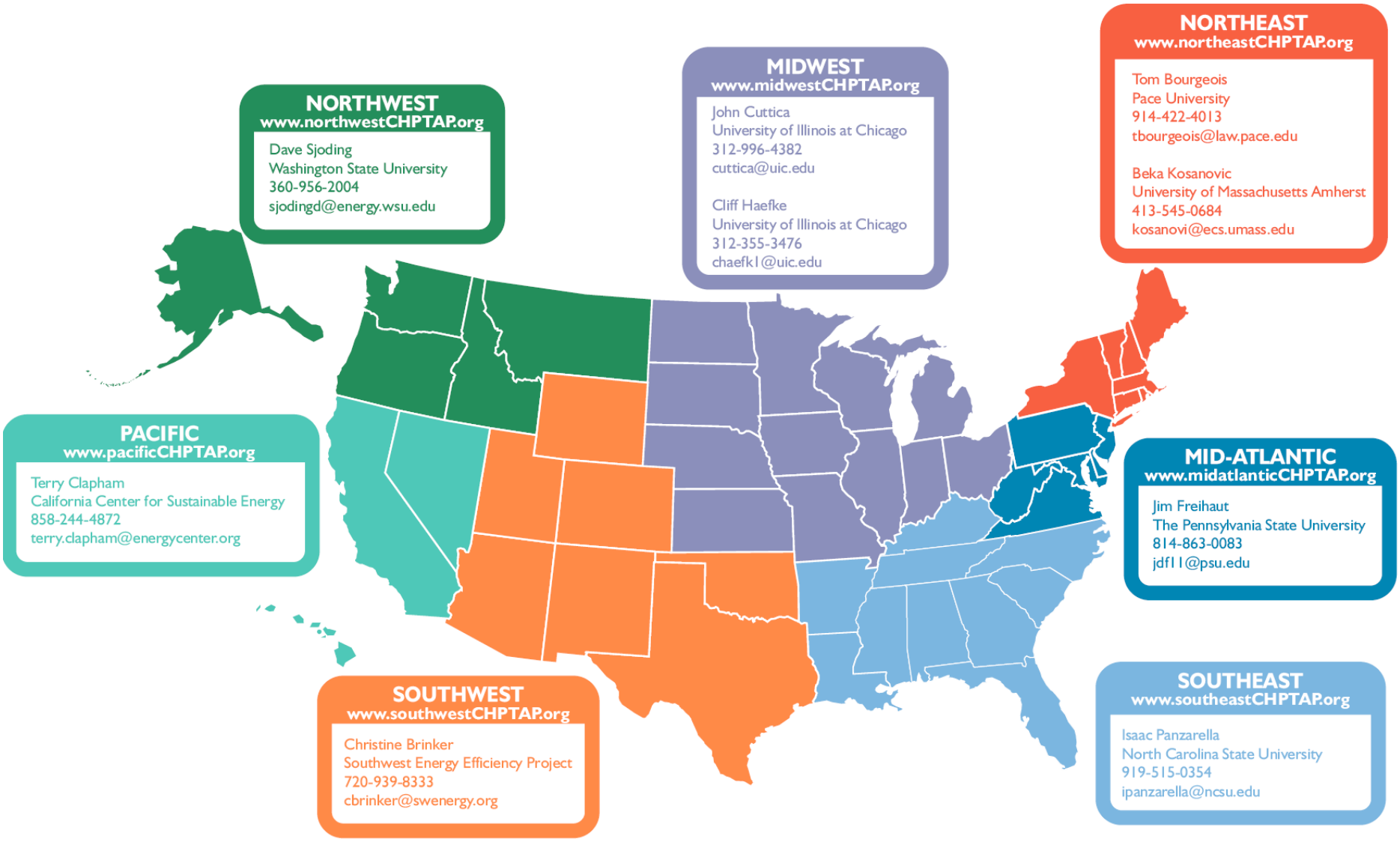
DOE CHP Technical Assistance Partnerships (TAPs): Locations, Contacts, and Web Sites



DOE CHP Technical Assistance Partnerships (TAPs): Program Contacts

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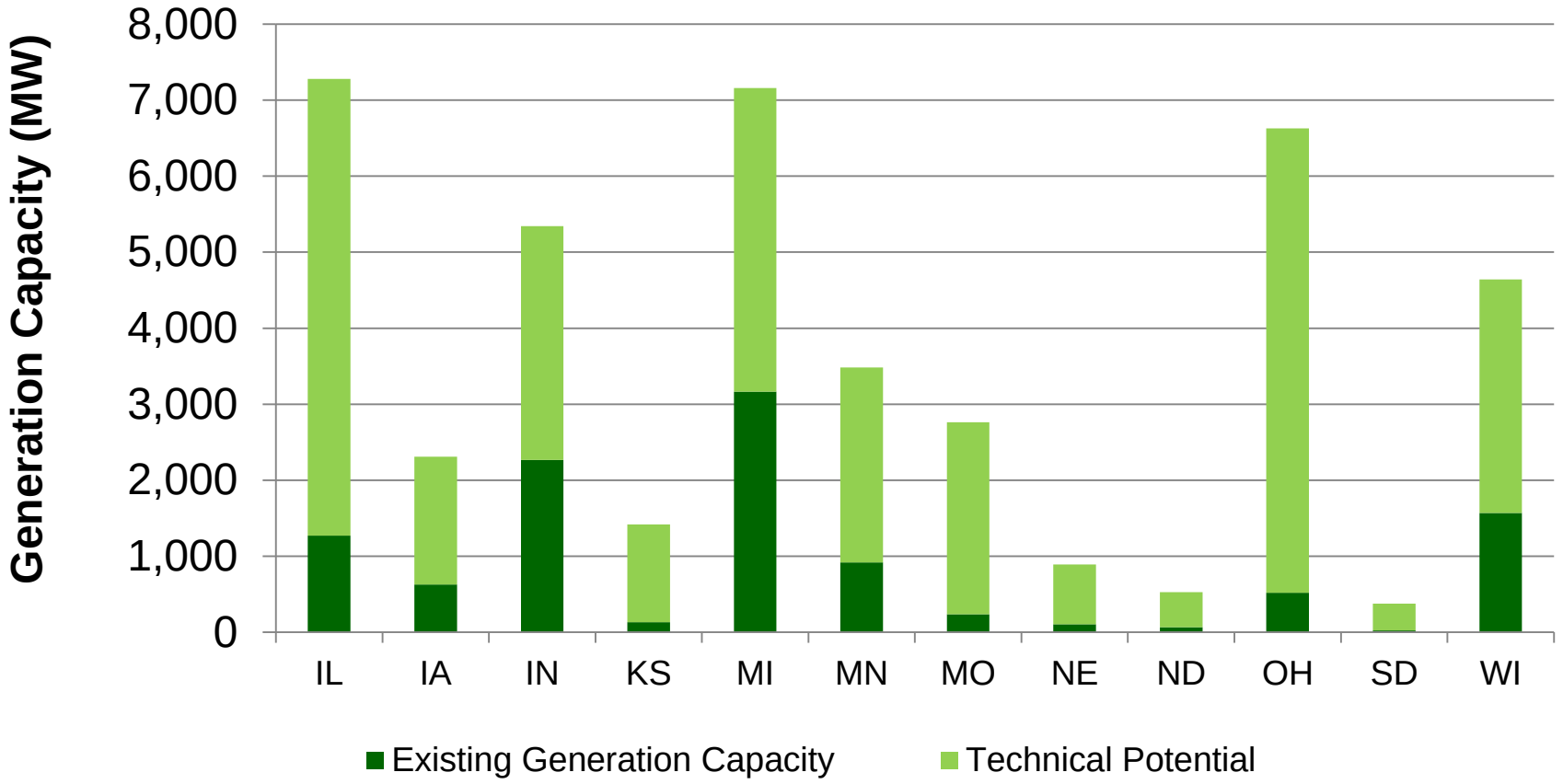
Electric Generating Capacity versus Existing CHP Generating Capacity

State	Status	Total State Electric Generation[1] (MW)	CHP Generating Capacity[2] (MW)	CHP as % of Total Elec Generation (MW)
Illinois	Deregulated	50,092	1,271	2.5%
Iowa	Regulated	15,757	630	4.0%
Indiana	Regulated	30,928	2,266	7.3%
Kansas	Regulated	13,600	134	1.0%
Michigan	Deregulated	32,992	3,164	9.6%
Minnesota	Regulated	16,608	918	5.5%
Missouri	Regulated	23,499	236	1.0%
Nebraska	Regulated	8,380	105	1.3%
North Dakota	Regulated	6,518	68	1.0%
Ohio	Deregulated	36,018	522	1.4%
South Dakota	Regulated	3,809	24	0.6%
Wisconsin	Regulated	19,050	1,570	8.2%

1 http://www.eia.gov/electricity/data/state/
2 http://www.eea-inc.com/chpdata/

Existing CHP Generation Capacity[1] versus Technical Potential[2]



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1 http://www.eea-inc.com/chpdata/
2 *ICF International*

Illinois

CHP Policy Activities

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Illinois CHP Policy Status (2012)

- CHP considered fuel switching (not an allowable technology under EERS)
- Questionable interest by state policy makers
- Utility perspectives varied
- No readily identifiable industry champion
- Governor's Office leading NGA Policy Academy Project

Changes Over the Last 12 Months

- Utilities will have a difficult time meeting EERS energy saving targets.
- Large industrials pushing for “self direct” option (EERS)
- NGA Policy Academy gives CHP needed visibility (Illinois EPA, ICC, Gov Office, SEO, SAG, Utilities)
- Boiler MACT Technical Assistance efforts also raising CHP awareness
- Activities outside Illinois helpful:
  - Ohio advances
  - Iowa and Minnesota interests
  - National Interest by SEE Action, Exec. Order, PEW, ACEEE, Energy Foundation, USCHPA, Industrial Efficiency Alliance, etc
- **Illinois utility interest in Geothermal Heat Pumps as allowable EERS technology = fuel switching issue for CHP goes away**

Illinois CHP Policy Activities

- NGA Policy Academy:
  - Strong engagement with the IL NGA proposal and encouraged the SEO and Gov. office to submit
  - Engaged ICC
  - Meetings with utilities provided opportunity to share thoughts on EE/CHP programs and engaging industrials
  - Educated the Strategic Advisory Group (SAG) twice
  - Worked with the SEO
  - CHP workshop held on policy needs (moderated by NGA Staff Member Sue Gander)

Illinois CHP Policy Activities (cont.)

- ICC Commissioners got interested:
  - NGA activities, NARUC meetings, SEE Action material
  - Illinois Commissioners held a special CHP briefing
    - Requested TAP presentation/participation
    - All 5 Commissioners in attendance
- Midwest Cogeneration Association (MCA):
  - Reviving Policy Committee – becoming very active, led by Pat Sharkey (Environmental Law Council, P.C.)
  - Policy Committee investigating permit by rule and other permitting aspects in Illinois
- Illinois Biogas/Biomass Grant Program (4 CHP projects recently awarded in WWTPs)

Illinois (Current Status)

- CHP/WHP are allowable technologies under EERS
- SEO included CHP/WHP program in the 3 year filing for public sector. Approval pending by the ICC (01/14)
- If approved, RFP to be issued in Spring 2014 and incentives as much as $750/kW of installed capacity starting June 2014 (limited funds).
- IOUs did not include a pilot CHP program in 3 year filing (industrial sector).
  - However, IOU did recognize CHP as an allowable technology that could now be included under existing program (i.e. custom programs or any large commercial or industrial program)
- Critical path is approval by ICC (January 2014).

Key Elements of the Proposed SEO CHP Program

- Includes Conventional CHP (min. fuel use annual efficiency of 60% with at least 20% of the systems total energy in the form of thermal energy) and Waste Heat to Power (WHP) CHP
- Incentive levels designed to provide on average the equivalent of $750/kW:
  - Incentive capped at $2M per CHP project or 50% of the total cost of the project (whichever is less)
  - Design incentive = $75/kW issued at completion of design phase
  - Construction incentive = $175/kW issued at the commissioning of the system
  - Production incentive = $0.08/kWh produced – issued at the end of 12 months of operation & based on meeting the measured operating requirements
  - Design & construction incentive capped at $650,000 (estimated 1/3 of incentives are up front and 2/3 are production incentives)
- For qualifying conventional CHP projects, 80% of incentive and savings paid from electric utility and 20% from gas utility.

Ohio

CHP Policy Activities

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Ohio Successes

- Ohio CHP Coalition formed in 2010 – loose/flexible group
- Environmental and industrials discussing CHP
- PUCO interested in CHP partnering with DOE to launch Boiler MACT Technical Assistance Pilot Program (Feb 2012)
- New Governor with big interest in energy, jobs, and shale gas (identified CHP as an energy pillar)
- SB 315 signed into law (June 2012)
  - WER included in RPS
  - Conventional CHP and WER included in EEPS

Ohio Status

- What was perceived as the “poster child” state for moving CHP/WER forward last year is in some trouble!!
- Implementation of CHP/WER under SB 315 has been slowed considerably (PUCO rules will not be finalized until early 2014, at the earliest)
- Senator Seitz (First Energy Territory) introduced SB 58 which is trying to freeze, repeal, weaken the EERS in Ohio (includes CHP/WER).
- Seitz supported by Ohio Energy Group (OEG) and Industrial Energy User Group (IEUG) – Opposed by Ohio Manufacturers Association (OMA) and Environmental Groups.
- Unsure where Governor Office stands; seems to prefer to let the process play out

Today's Message to Developers: Waiting for CHP/WHP EERS Rules is an Unnecessary Project Delay

- PUCO has legal authority and is willing to consider projects for approval
- Even in the absence of rules, developers can make their own proposals, allowing projects to:
  - Present custom incentives for consideration
  - Influence the PUCO future rule proposals
- Ohio allows for special contracts between customers and utilities:
  - Reasonable Arrangements – OAC 4901:1-38
  - Unique Arrangements – OAC 4901:1-38-05
- Another opportunity is exemption of the EE rider using the EECs from CHP to meet the EERS benchmarks (Mercantile only)

Other CHP Policy Developments

- Duke Energy Ohio
  - 2014-2016 EE Portfolio Plan Stipulation Filed With PUCO*
  - Duke Energy Ohio will work with interested customers in developing CHP, to create a potential incentive** or reasonable arrangement mechanism to be jointly filed with the Commission for approval.
- Dayton Power & Light
  - 2013-2015 EE Portfolio Plan Stipulation Filed With PUCO*
  - DP&L to conduct an educational workshop for potential CHP customers;
  - Reserve $250,000 from the Pilot Program budget for customer incentive payments for CHP and WER;
  - Consider the cost-effectiveness and feasibility of a CHP/WER Program for 2016 Portfolio
- Archived webinar will be made available shortly at www.MidwestCHPTAP.org/OhioCHP/

* These plan s have not yet been approved by the PUCO
** The stipulation does not include any budget allocation

Recent CHP Installations in Ohio

Despite the policy delays and uncertainties, the targeted efforts in Ohio are starting to realize momentum and see results:

2012

- Toledo Art Museum, Toledo – 130 kW
- University of Toledo Data Center, Toledo – 260 kW
- Chillicothe VA Medical Center, Chillicothe – 450 kW
- Dominion East Ohio Gas Company, Cleveland – 1,000 kW

2013

- Pearl Valley Cheese, Fresno – 65 kW
- Wildwood Hospital (ProMedica), Toledo – 130 kW
- EnerFab, Cincinnati – 1,000 kW*
- Campbell Soup, Napoleon – 3,000 kW

** Unconfirmed generating capacity*

Iowa

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NGA Policy Academy

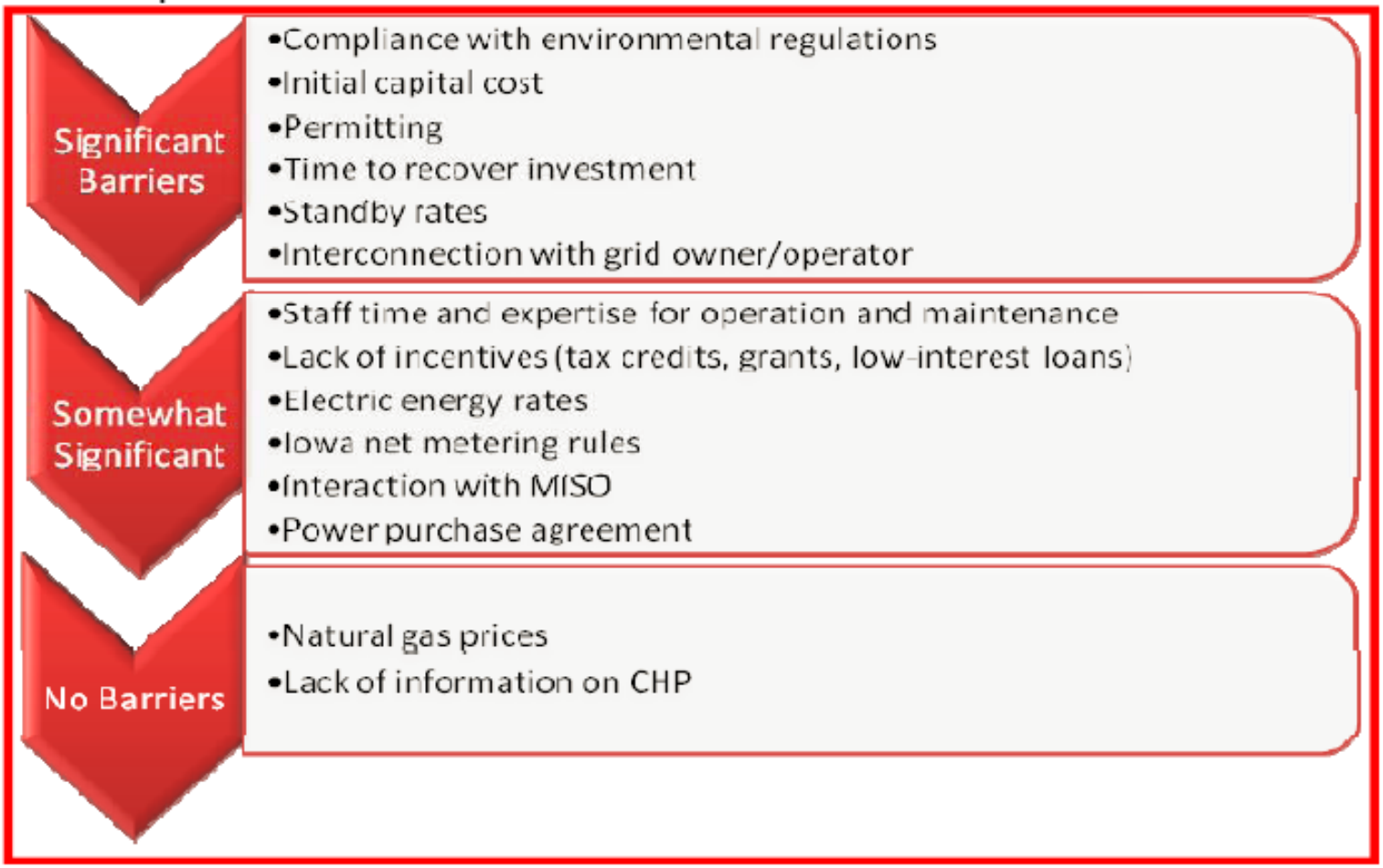
- Team included Iowa Utilities, Iowa Economic Development Authority (SEO), MidAmerican Energy Co., Black Hills Energy Company, State-Federal Relations
- Conducted surveys to identify barriers
- Hosted stakeholder education meetings
- Conducted CHP site tours with policy makers
- Presented report to Governor's Office

NGA Policy Academy

- Action Plan Recommendations
  - IEDA (SEO) to continue non-utility-related CHP activities of NGA Policy Academy (including endorsement of DOE Boiler MACT Tech Assistance)
  - Iowa Utilities Board will continue to examine utility-related aspects of CHP
- Action Plan available online @ http://www.iowaeconomicdevelopment.com/userdocs/documents/ieda/Enhancing_IndustryFinalReport.pdf

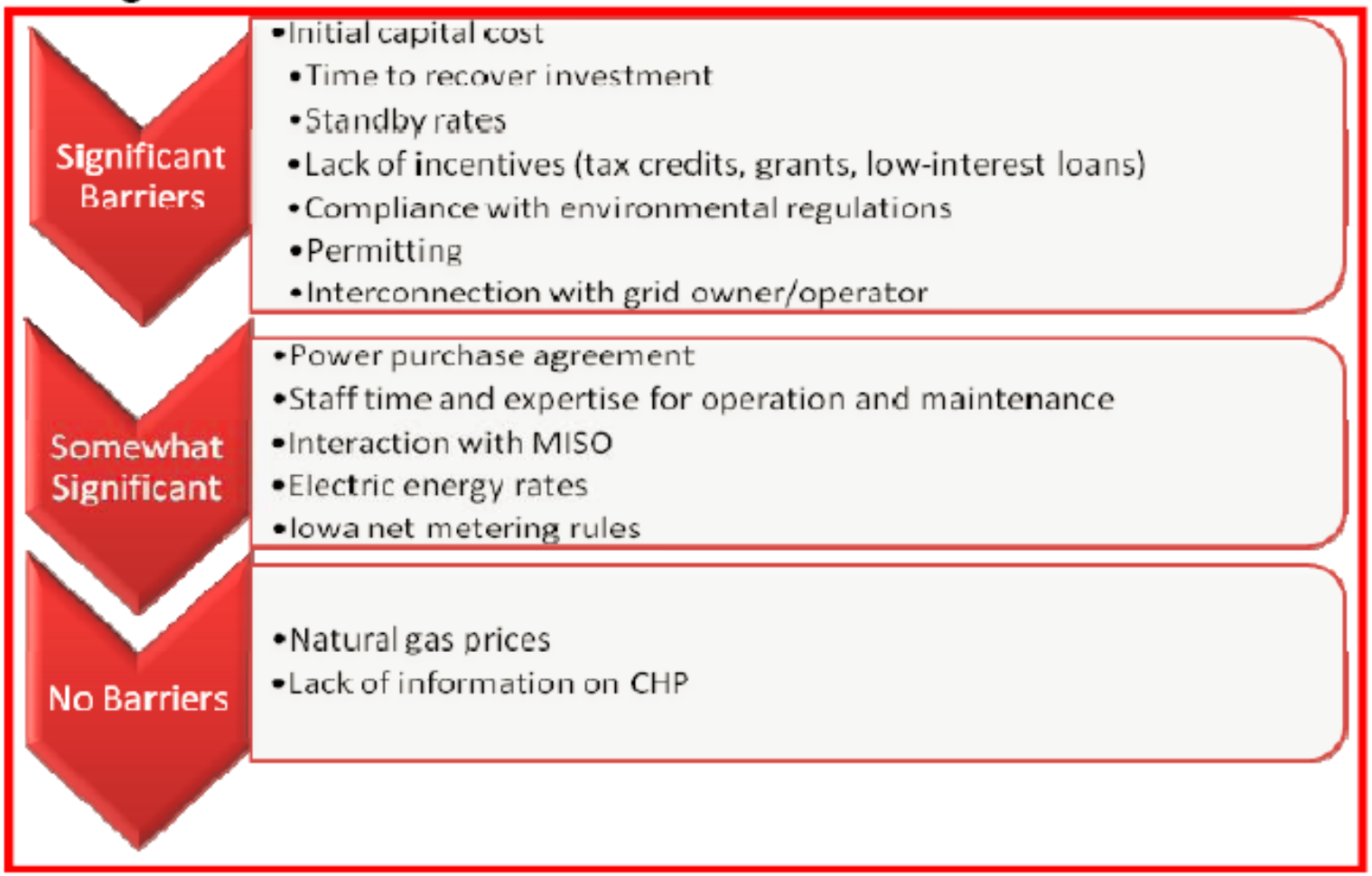
Iowa – Survey Results (Group 1)

Figure 1 BARRIERS TO EXISTING CHP FACILITIES
Responses are sorted from most common to least common



Iowa – Survey Results (Group 2)

Figure 2 BARRIERS TO THOSE INTERESTED IN CHP



Iowa – Other Info from Surveys

- Other qualitative feedback includes:
  - Operation of CHP is not a core business function.
  - Organizations are reluctant to spend the upfront money for a feasibility study.
  - It is easier to appropriate funds for utility expenses than to get capital expenses for new construction of CHP.
  - The cost of generators has increased due to lack of competition in the market.
  - Air permitting regulations do not recognize reduced net air emissions from CHP.
  - Our site is reaching maximum emission limits even with technological controls.
  - Utilities are non-supportive of CHP efforts.
  - Spark spread needs to widen a bit more to make CHP financially attractive.
  - Purchase price rates vary considerably across the state and project by project.

Standby Rates and EEPS

- Mid-American developed new standby rates with hearing on docket expected December 2013
- Alliant and Mid-American have included Bottoming Cycle CHP (i.e. WHP) in their IUB filings as a qualifying technology under EEPS for 3 Year Utility Plans
  - IUB requested more details on Alliant's CHP inclusion
  - Board approval required by December 2013
- Iowa Environmental Council (IEC) and Environmental Law and Policy Center (ELPC) active in settlement agreements with both Iowa utilities

Standby Rates

- In 2010, neither utility included CHP in their EEPS in their filing; instead, opting for a rate based approach to CHP
- Settlement agreements were opened by IEC and ELPC prompting request of Midwest CHP TAP studies on standby rates
- MidAmerican's rates had not changed in 17 years (before creation of MISO and the availability of power markets)
- MidAmerican proposed new standby rates for all three of MidAmerican's tariffs in Iowa (north, south, east) that will be under one COS and one tariff (hearing on docket 12/13)
- Study: Iowa On-Site Generation Tariff Barrier Overview (2011)
  - http://www.iowaeconomicdevelopment.com/userdocs/documents/ieda/Iowa-On-Site-Generation-Tariff-Barrier-Overview_April-20121.pdf
- Study: MidAmerican Standby Rate Proposals (2012)
  - http://www.iaenvironment.org/documents/energy/Mid-American%20Standby%20Rate%20Proposals%20Report.pdf

Recent Utility Testimony on CHP in EEPS

- Mid-American
  - July 2013 Testimony from Czachura, Mid-American: *"MidAmerican considers projects that utilize waste heat recovery for purposes of electricity production or additional use of thermal energy to be eligible for potential rebates under either the custom track of its Nonresidential Equipment program or as part of its Nonresidential Energy Analysis program. MidAmerican does not consider topping cycle CHP to be eligible for potential rebates under any of its energy efficiency programs."*
- Alliant
  - July 2013 IPL Testimony: *"CHP is part of IPL's Custom Rebate program--each situation is unique."*
  - July 2013 IPL Testimony: *"the program is focused on customers utilizing waste heat recovery to consume their existing fuel source more efficiently."*
  - IPL Communications: *"Incentive will be 150% of first year energy dollar savings of the primary fuel serving the thermal load."*

Minnesota

CHP Policy Activities

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Minnesota

- Department of Commerce, Division of Energy Resources has shown increased interest and support of DG opportunities
  - hosted several DG workshops
  - grant funding for DG projects
  - grant funding for white papers and studies surrounding DG concepts and issues (specifically calling out CHP)
- ERC/UIC paper on standby rates and related hurdles will be published by end of year (CARD grant) – “Analysis of Standby Rates and Net Metering Policy Effects on Combined Heat and Power (CHP) Opportunities in Minnesota”
- Another CARD grant awarded “A Combined Heat and Power (CHP) White Paper Evaluating Regulatory Issues and Policies Specific to Minnesota, and a Minnesota CHP Potential Study” (will include CHP market potential study)

HF 729

- HF 729 signed into law May 23, 2013 expressly includes CHP in state's Conservation Improvement Program (CIP)
- Energy portion of the bill focuses heavily on solar there are a number of wins for CHP technologies, including both top and bottom cycle technologies
- Provisions benefitting CHP:
  - Net Metering – All DG with a capacity <1 MW and with an efficiency of at least 40% may participant in the net metering program. Credit for Net Excess Generation (NEG) for customers between 40 kW and 1 MW shall be at the PURPA avoided cost rate. NEG from systems below 40 kW shall be at the average retail rate.
  - Avoidance of Standby Rate - The utility may not impose standby rates on NM customers with a capacity below 100 kW and may only impose standby rates for larger NM customers "in accordance with an order of the commission establishing the allowable costs to be recovered through standby charges."

Source: Midwest Cogeneration Association,
http://www.cogeneration.org/PolicyCommittee/SummaryArticle_%20NewMinnesotaEnergyLaw_2013.pdf

HF 729 (cont.) & Alliant Energy

- Meter Aggregation - Metering aggregation is allowed for the purposes of measuring electricity for net metering on a customer's contiguous property. The 1 MW NM total applies to the aggregate meter
- CHP in the Conservation Improvement Program - HF 729 states that, *"demand side natural gas or electric energy displaced by use of waste heat recovered and used as thermal energy, including the recovered thermal energy from a cogeneration or combined heat and power facility, is eligible to be counted towards a utility's natural gas or electric energy savings goals, subject to department approval."*

- MCA submitted joint testimony with the Alliance for Industrial Efficiency on September 30th on PUC Docket No. E-999/R-13-729 – Possible Amendments to the Rules Governing Cogeneration and Small Production, Minnesota Rules, Chapter 7835
- Alliant Energy to sell Minnesota utility business for $128 million

Source:
- MCA Debrief http://www.cogeneration.org/PolicyCommittee/SummaryArticle_%20NewMinnesotaEnergyLaw_2013.pdf
- MCA Testimony http://www.cogeneration.org/PolicyCommittee/MCAComments_MN_PUC_Docket%20E-999-R-13-729.pdf
- Alliant http://www.jsonline.com/blogs/business/222235121.html

Indiana, Michigan, Wisconsin

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Indiana

- Industrials reporting that electric prices are increasing? 10-15% of coal-powered utility generation likely retiring?*
- Governor interested in developing an energy plan in near future? Will CHP be included?
- NIPSCO 30 MW Feed-in-Tariff (FIT) for Renewables provides example for Midwest states. Can FIT model be applicable to CHP in Indiana or other states?

* - Coal Retirements and the CHP Investment Opportunity, http://www.aceee.org/research-report/ie123

Michigan

- Consumers Energy and MSU co-sponsoring forum on Nov. 26th @ MSU – "2013 Forum on Anaerobic Digester Production of Energy: New Opportunities for Projects in Michigan"[1]
- $600M in utility incentives over 10 years under consideration in lieu of $2B utility power plant.[2] Fuel switching not allowable, therefore CHP is not eligible.
- 100 MW utility owned CHP plant commissioned in Lansing (2013) - Lansing Board of Water & Light (REO Town Cogeneration Plant)[3]
- Is there interest by Governor and legislature to open RPS?

1 - http://anrcom.msu.edu/anrcom/news/item/michigan_state_university_and_consumers_energy_partner_to_offer_renewable_e
2 – unconfirmed
3 - http://www.lansingstatejournal.com/article/20130630/BUSINESS/306300016/BWL-s-REO-Town-plant-fuels-next-generation-power?nclick_check=1

Wisconsin

- Interest and activity with renewable fueled CHP projects (i.e. biogas and biomass fuels)
  - sectors: dairies, food processing, pulp & paper, etc.
  - community digesters (Dane County, GreenWhey Energy in Turtle Lake)
- We Energies utility owned 50 MW biomass CHP plant to assist RPS goal*
- Gundersen Health System – 3 recently installed CHP projects assisting organization become “energy independent” by 2014
- Potential opportunities or interest to investigate interconnection standards

** http://www.jsonline.com/business/power-plant-to-run-on-wisconsin-biomass-b9985790z1-221960911.html*

Opportunities with Utilities: Midwest CHP Example Installations partnering with Utilities

- We Energies (Domtar Paper Mill), Rothschild, WI, 50 MW boiler/steam turbine (2013)[1]
- Lansing Board of Water & Light (REO Town Cogeneration Plant), Lansing, MI, 100 MW boiler / steam turbine (2013)[2]
- City of Macon (Northeast Missouri Grain, LLC), Macon, MO, 10 MW combustion turbine (2003)[3]
- City of Russell (U.S. Energy Partners, LLC), Russell, Kansas, 15 MW combustion turbine (2002)[4]
- Detroit Thermal Energy (Cristal Global), Ashtabula, OH, 28 MW combustion turbine (2001)[5]
- Muscatine Power & Water (Grain Processing Corp.), Muscatine, IA, 18 MW boiler / steam turbine (2000)[6]

1 - http://www.jsonline.com/business/power-plant-to-run-on-wisconsin-biomass-b9985790z1-221960911.html
2 - http://www.lansingstatejournal.com/article/20130630/BUSINESS/306300016/BWL-s-REO-Town-plant-fuels-next-generation-power?nclick_check=1
3 - http://www.midwestcleanenergy.org/profiles/ProjectProfiles/NortheastMissouriGrain.pdf
4 - http://www.midwestcleanenergy.org/profiles/ProjectProfiles/USEnergyPartners.pdf
5 - http://www.eea-inc.com/chpdata/States/OH.html
6 - http://www.eea-inc.com/chpdata/States/IA.html

Questions & Discussion

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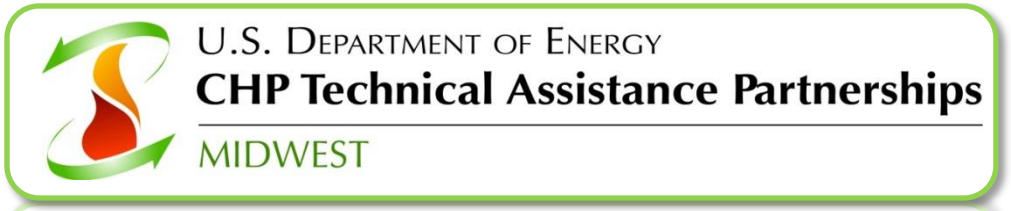

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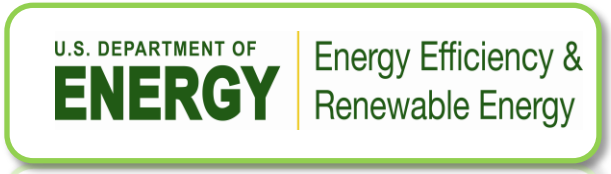

http://www1.eere.energy.gov/manufacturing/distributedenergy/chptaps.html

CHP TAP Policy Activities

- Provide unbiased, factual information & analysis to policymakers, regulators, advocates and end-users on state policies that facilitate the implementation of CHP.
- Focus on:
  - State best practice policies
  - Lessons learned from other state experiences
  - Analysis on implications of a proposed policy

CHP TAP Policymaker Education

- State policy important – a framework for project economics.
- Goal: Education on state best practice policies and lessons learned to inform state policies
- Focus on policies:
  - Providing a level playing field
  - Accounting and appropriately valuing costs and benefits

Example Opportunities to Partner with States

- Identify opportunities for CHP to bring facilities into **compliance** with environmental regulation – Boiler MACT (in process)
- Utilize CHP as a **resiliency** opportunity for critical infrastructure during natural and man-made disasters – DOE/ORNL/ICF Study, DOE/EPA/HUD Guide
- Assess the impacts on a CHP installation of various levels of **incentives, energy prices, utility interconnection standards and rates, etc. –** SEE Action CHP Guide, Analysis - DOE/ORNL/ICF
- Collaborate in the development and implementation of strategic plans to heighten **manufacturing productivity and competitiveness** -- NGA Policy Academy (Phase II forthcoming)
- Utilize CHP facilities to **harden and stabilize the grid** – both in stand-alone and district energy/microgrid scenarios – Partner with IDEA